Please type a plus sign (+) inside this box →	
, locate type a place orgin ( )	1 T I

Examiner

Signature

Pto/sbroba (10-96)
Please type a plus sign (+) inside this box 

+ Approved for use through 10/31/99. OMB 0651-0031

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of Information unless it contains a valid OMB control number.

Substitute fo	er form 1449A/F	то		Сотр	olet if Known
				Application Number	
INFORMATION DISCLOSURE				Filing Date	
STATEMENT BY APPLICANT			PLICANT	First Named Inventor	Sukant Tripathy
				Group Art Unit	
(use as many sheets as necessary)			ecessary)	Examiner Name	
Sheet	1	of	5	Attorney Docket Number	NA-1219-CIP 1

•			U.S. PATENT DOCL	IMENTS	
xaminer	Cite No.1	U.S. Patent Document  Kind Code <sup>2</sup> (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A	5,143,828	Akkara et al.	09-01-1992	
<u> </u>	В	5,253,100	Yang et al.	10-12-1993	
$\top$	С	5,370,825	Angelopoulos et al.	12-06-1994	
$\top$	D	5,420,237	Zemel et al.	05-30-1998	
	E	5,489,400	Liu et al.	02-06-1996	
	F	5,994,498	Tripathy et al.	11-30-1999	
	G	6,018,018	Samuelsen et al.	01-25-2000	
1/	Н	6,150,491	Akkara	11-21-2000	
W	I	6,569,651	Samuelson et al.	05-27-2003	

				FORE	IGN PATENT DOCUMENT	rs		
	<u> </u>	F	oreign Patent Do		Name of Patentee or	Date of Publication of	Pages, Columns, Lines, Where Relevant	
xaminer Cite nitials No.1	Cite No.1	Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>8</sup> (if known)	Applicant of Cited Document	Cited Document MM-DD-YYYY	Passages or Relevant Figures Appear	ļ
								+
					····			#
			<del> </del>					+
								Ŧ
		-				+		$\dagger$
								4
								1

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Date

Considered

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will very depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>1</sup> Unique citation designation number. 2 See attached Kinds of U.S. Patent Documents. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the Indication of the year of the reign of the Emperor must precede the serial number of the patent document. Skind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

Please type 8 plus sign (+) inside this box ->	1	ĺ

PTO/SB/08B (10-96)
Please type a plus sign (+) inside this box 

+ Approved for use through 10/31/99. OMB 0851-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid CMB control number.

Cubelibe	ite for form 14498/J	PIO .		Complet If Known			
				Application Number			
INFC	<b>ORMATI</b>	ON DIS	CLOSURE	Filing Date			
STA	TEMENI	TRY AL	PPLICANT	First Named Inventor	Sukant Tripathy		
317				Group Art Unit			
1	(use as mai	ny sheets as i	necessary)	Examiner Name			
Sheet	2	of	5	Attorney Docket Number	NA-1219-CIP 1		

	<del></del>	OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the	7
Examiner Initials*	Cite No.1	Include name of the author (in CAPTIAL LETTERS), due of the ancide (which appropriate), due of the litem (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	12
<b>B</b> 1		Tzou, K. and Gregory, R.V., "A method to prepare soluble polyaniline salt solutions - in situ doping of PANI base with organic dopants in polar solvents," Synthetic Metals, 53:365-377 (1993).	
	к	Nguyen, M.T., et al., "Synthesis and properties of novel water-soluble conducting polyaniline copolymers," Macromolecules, 27:3625-3631 (1994).	
	L	Shannon, K. and Fernandez, J.E., "Preparation and properties of watersoluble, poly(styrenesulfonic acid) -doped polyaniline," J. Chem. Soc., Chem. Comm., 643-644 (1994).	
	м	Tanaka, K., et al., "Doping effect of C60 on soluble polyaniline," Synthetic Metals, 66:193-196 (1994).	
	N	Ferreira, M., et al., "Molecular self-assembly of conjugated polyions: a new process for fabricating multilayer thin film heterostructures," Thin Solid Films, 244:806-809 (1994).	
	0	Ng, S.C., et al., "Poly(o-aminobenzylphosphonic acid): a novel water soluble, self-doped functionalized polyaniline," J. Chem. Soc., Chem. Commun., 1327-1328 (1995).	
	P	Chen, S. and Hwang, G., "Synthesis of water-soluble self-acid-doped polyaniline," J. Am. Chem. Soc., 116:7939-7940 (1994).	
	Q	Chen, S. and Hwang, G., "Water-soluble self-acid-doped conducting polyaniline: structure and properties," J. Am. Chem. Soc., 117:10055- 10062 (1995).	
	R	Chan, H.S.O., et al., "A new water-soluble, self-doping conducting polyaniline from poly(o-aminobenzy)phosphonic acid) and its sodium salts: synthesis and characterization," J. Am. Chem. Soc., 117:8517-8523 (1995).	
	s	Dordick, J.S., et al., "Peroxidases depolymerize lignin in organic media but not in water," Proc. Natl. Acad. Sci. USA, 83:6255-6257 (1986).	
M.	т	Dordick, J.S., et al., "Polymerization of phenols catalyzed by peroxidase in nonaqueous media," Biotechnology and Bioengineering, 30:31-36 (1987).	
100			

Examiner Signature	the Thom	Date Considered 5 24 5	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.

		٠
Please type a plus sign (+) inside this box	+	l

Sheet

of

NA-1219-CIP 1

PTO/SB/088 (10-95)
Please type a plus sign (+) inside this box 

+ Approved for use through 10/31/99. OMB 0551-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. C mpl t if Kn wn Substitute for form 1449B/PTO **Application Number** INFORMATION DISCLOSURE Filing Date STATEMENT BY APPLICANT First Named Inventor Sukant Tripathy Group Art Unit **Examiner Name** (use as many sheets as necessary)

**Attorney Docket Number** 

		OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), dete, page(s), volume-issue number(s), publisher, city and/or country where published.	T2
OX	ט	Kazandjian, R. Z., et al., "Enzymatic analyses in organic solvents." Biotechnology and Bioengineering, 28:417-421 (1986).	
1	v	Klibanov, A.M. et al., "Enzymatic removal of toxic phenols and anilines from waste waters," J. Appl. Biochern., 2:414-421 (1980).	
	W	Sakaki, J., et al., "Lipase-catalyzed asymmetric synthesis of 6-(3-chloro-2-hydroxpropyl) -1, 3-dioxin-4-ones and their conversion to chiral 5,6-epoxyhexanoates," Tetrahedron: Asymmetry, 2:343-346 (1991).	
	x	Ikeda, R., et al., "Novel synthetic pathway to a poly (phenylene oxide) . Laccase-catalyzed oxidative polymerization of syringic acid," Macromolecules, 29: 3053-3054 (1996).	
	Y	Akkara, J.A., et al., "Synthesis and characterization of polymers produced by horseradish peroxidase in dioxane," J. Polymer Sci.: Part A: Polymer Chemistry, 29:1561-1574 (1991).	
	z	Klibanov, A.M. and Morris, E.D., "Horseradish peroxidase for the removal of carcinogenic aromatic amines from water," Enzyme Microb. Technol., 3:119-122 (1981).	
	AA	Ayyagari, M.S., et al., "Controlled free-radical polymerization of phenol derivatives by enzyme-catalyzed reactions in organic solvents," Macromolecules, 28:5192-5197 (1995).	
	ΑВ	Bruno, P.F., et al., "Enzymatic mediated synthesis of conjugated polymers at the Langmuir trough air-water interface," Lanymuir, 11:889-892 (1995).	
	AC	Lapkowski, M., "Electrochemical synthesis of linear polyaniline in aqueous solutions," Synthetic Metals, 35:169-182 (1990).	
	AD	March, J., in Advanced Organic Chemistry - Reactions, Mechanisms, and Structure (NY: Magraw-Hill Company), pp.667, 668 (1977).	
	AE	Shinohara, H., et al., "Enzyme microsensor for glucose with an electrochemically synthesized enzyme-polyaniline film," Sensors and Actuators, 13:79-86 (1988).	

A STATE OF THE PARTY OF THE PAR					
Examiner Signature	the	The out	Date Considered	5/24/55	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.

Please type a plus sign (+) inside this box ->	$\sqcap$	

PTO/SB/08B (10-96)
Please type a plus sign (+) Inside this box 

+ Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO				Compl te if Known		
				Application Number		
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Filing Date		
				First Named Inventor	Sukant Tripathy	
JIA	PIAIFIA	DI A	LIOAIII	Group Art Unit		
	(use as mai	ny sheets as	necessary)	Examiner Name		
Sheet	4	of	5	Attorney Docket Number	NA-1219-CIP 1	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS							
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²				
AF		Alva, K.S., et al., "Biochemical synthesis of water soluble polyanilines: poly(p-aminobenzoic acid), " Macromol. Rapid Comm., 17:859863 (1996).					
1	Liao, Y., and Levon, K., "Solubilization of polyaniline in water by interpolymer complexation," Macromol. Rapid Commun., 16: 393-397 (1995).						
	на	Excerpts from "Plastics Engineering: Plastics - Saving Planet Earth," Volume LIII, Number 3 - (Toronto; March, 1997).					
	AI	Westerweele, E., et al., "'Inverted' Polmer Light-Emitting Diodes on Cylindrical Metal Substrates," Advanced Materials, 7(9) :788-790 (1995).					
	AJ	Ryu, K., et al., "Peroxidase-Catalyzed Polymerization of Phenols: Kinetics of p-Cresol Oxidation in Organic Media," American Chemical Society Symp. Ser., 389:141-157 (1989).					
	AK	Alva, K.S., et al., "Novel Immobilization Techniques in the Fabrication of Efficient Electrochemical Biosensors," SPIE, 2716: 152-163 (1996).					
		Genies, E.M., et al., "A rechargeable battery of the type polyaniline/propylene carbonate -LiC104/Li-Al," Journal of Applied Electrochemistry 18:751-756 (1988).					
	АМ	Samuelson, L.A., et al., "Biologically Derived Conducting and Water Soluble Polyaniline," Macromolecules 31:4376-4378 (1998).					
	AN	Liu, W., et al., "Enzymatically Synthesized Conducting PolLyaniline," J. Am. Chem. Soc. 121:71-78 (1999).					
	AO	Zhang, Q.M., et al., "Enzymatic Template Synthesis of Polyphenol," Materials Research Society 600:255-259 (2000).					
. 00	АР	Akkara, J.A., et al., "Hematin-Catalyzed Polymerization of Phenol Compounds," Macromolecules 33:2377-2382 (2000).					

Action to the second	_			The second	
Examiner Signature	ble	Much	Date Considered	1/4/85	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

	$\neg$
Please type a plus sign (+) inside this box -	<b>.</b> I
Ligang (libe a bire ordin ( . ) money and a	

PTO/SB/08B (10-96)
Please type a phis sign (+) inside this box 

Approved for use through 10/31/99. OMB 0651-0031

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1895, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO				. Compl t if Kn wn		
				Application Number		
INFO	ORMATIO	n dis	CLOSURE	Filing Date		
STATEMENT BY APPLICANT				First Named Inventor	Sukant Tripathy	
STATEMENT DE AFTERNANT			LIOAITI	Group Art Unit		
	(use as many	sheets es	necessary)	Examiner Name		
Sheet	5	of	5	Attorney Docket Number	NA-1219-CIP 1	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS							
xaminer niliais	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T2				
W	ΑQ	Dordick, J. S., "Enzymatic catalysis in monophasic organic solvents," 1 Eynzyme Microbial Technology 11: 194-211 (1989).					
	AR	Dunford, H.B., "Horseradish Peroxidase: Structure and Kinetic ji. Properties," In Peroxidases in Chemistry and Biology Vol. II, J. Everse, et al., eds (FL: CRC Press, Inc.), Pp 2-17 (1991).					
	AS	Wudl, F., et al., "Poly(p-phenyleneamineimine): Synthesis and arison to Polyaniline" J. Am. Chern. Soc. 109:3677-3684 (1987).					
`	АТ	Stafström, S., et al., "Polaron Lattice in Highly Conducting Polyaniline: Theoretical and Optical Studies," The American Physical Society 59:1464-1467 (1987).					
	ΑU	Shacklette, L.W., et al., "EMI Shielding of Intrinsically Conductive Polymers, "In Search of Excellence by Society of Plastic Engineers and Plastics Engineering 665-667 (1991).					
M	ΑV	Przybycien et al. "Electrochemical separation utilizing metalloporphyrins and metallophthalocyanines", 1998, Chem Abstract 128: 162418.					
1.4							
	_		_				

Examiner	10	Date	doll	5
Signature	We Shoom	Considered	SILAI	<u>(0)</u>

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.